1861MNRAS..21...77W

Abstract of his latest Results. By Prof. Wolf.

(*Translation communicated by Mr. Carrington.*)

Some fine series of observations of Flaugergues, Adams, Arago, and others, have enabled me to fill in previous breaks, and to express in the same unit my Relative numbers (for the abundance of Solar Spots in successive years) for the years from 1749 to 1860. They are as follows:—

1749	63·8	1777	63·0	1805	50·0?	1833	7·5 *m*
1750	68·2 M	78	94·8	06	30·0?	34	11·4
51	40·9	1779	99·2 M	07	10·0?	35	45·5
52	33·2	1780	72·6	08	2·2	36	96·7
53	23·1	81	67·7	1809	0·8	37	111·0 M
54	13·8	82	33·2	1810	0·0 *m*	38	82·6
55	6·0 *m*	83	22·5	11	0·9	1839	68·5
56	8·8	84	4·4 *m*	12	5·4	1840	51·8
57	30·4	85	18·3	13	13·7	41	29·7
58	38·3	86	60·8	14	20·0?	42	19·5
1759	48·6	87	92·8 M	15	35·0?	43	8·6 *m*
1760	48·9	88	90·6	16	45·5 M	44	13·0
61	75·0 M	1789	85·4	17	43·5	45	33·0
62	50·6	1790	75·2	18	34·1	46	47·0
63	37·4	91	46·1	1819	22·5	47	79·4
64	34·5	92	52·7?	1820	8·9	48	100·4 M
65	23·0	93	20·7?	21	4·3	1849	95·6
66	17·5 *m*	94	23·9	22	2·9	1850	64·5
67	33·6	95	16·5	23	1·3 *m*	51	61·9
68	52·2	96	9·4	24	6·7	52	52·2
1769	85·7 M	97	5·6	25	17·4	53	37·7
1770	79·4	98	2·8 *m*	26	29·4	54	19·2
71	73·2	1799	5·9	27	39·9	55	6·9
72	49·2	1800	10·1	28	52·5	56	4·2 *m*
73	39·8	01	30·9?	1829	53·5 M	57	21·6
74	47·6?	02	38·3?	1830	59·1	58	50·9
75	27·5 *m*	03	50·0?	31	38·8	59	96·4
1776	35·2	1804	70·0? M	1832	22·5	1860	98·6 M

If these numbers are laid down graphically, there results a curve-line consisting of numerous waves. It is unquestionable that the length of these waves is variable, and all the epochs of minimum since the discovery of solar spots are very nearly given by the formula

Downloaded from http://mnras.oxfordjournals.org/ at University of Ulster at Coleraine on May 20, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System

1861MNRAS..21...78.

$$\varepsilon_x = 1732{\cdot}823 + 11{\cdot}119 \,.\, x$$
$$+ 1{\cdot}621 \,.\, \sin\left(146^\circ + x \,.\, \frac{360^\circ}{15}\right)$$
$$+ 1{\cdot}405 \,.\, \sin\left(230^\circ + x \,.\, \frac{360^\circ}{5}\right)$$

If the two last variable terms in this formula are neglected, we have the mean epochs of Minimum; and if we compare these with the epochs given by the observations, and with the height of the Maxima expressed by the Relative numbers, we find there is a very remarkable connexion, which the following table places clearly in evidence:—

True Minimum.	True — Mean Minimum.	Diff.	Rel. No. of Max.	Diff.	True Maximum.
1744·5	+0·588				
		+	68·2		1750·0
1755·7	+0·639			+	
		−	75·0		1761·5
1766·5	+0·320			+	
		−	79·4		1770·0
1775·8	−1·449			+	
		−	99·2		1779·5
1784·8	−3·618			−	
		+	90·6		1788·5
1798·5	−1·037			−	
		+	70·0		1804·0
1810·5	−0·156			−	
		+	45·5		1816·8
1823·2	+1·425			+	
		−	53·5		1829·5
1833·8	+0·906			+	
		−	111·0		1837·2
1844·0	−0·013			−	
		+	110·4		1848·6
1856·2	+1·068			−	
			98·6		1860·5

The constant opposition of signs can hardly be regarded by any one as accidental, and if admitted to be regular, we have manifestly this law,—*greater activity on the Sun goes with shorter periods, and less with longer periods.* I believe this law to be one of the most important relations among the Solar actions yet discovered, and which, taken in connexion with the results for distribution in heliographical latitude, and corresponding apparent periods of rotation, promises to throw much light on this difficult subject, and perhaps even on the phenomena of Variable Stars.

Zurich, 1861, *Jan.* 19.

Mr. Carrington wishes to call attention to the question of the determination of the figure of the Sun, and suggests the measurement for this purpose of photographic pictures of the disk. By aid of a reference given by Mr. Carrington, the Editor has found as follows:—

Downloaded from http://mnras.oxfordjournals.org/ at University of Ulster at Coleraine on May 20, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System